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Next, as shown in FIG. 3H, step S8 for conducting bending process of the needle body portion 5 is performed. The needle body portion 5 is bent processed to be a substantially semi-circular arc shape.

By using a grooved pulley in which a plurality of grooves for accommodating needle material are formed at the outer peripheral surface, conveyance, positioning, and processing can be automatically performed in succession in the above step 5 to step 8.

Next, step S9 for heat treatment of the needle tip portion 4 and the needle body portion 5 is performed.

Next, step S10 for polish finishing process of the needle tip portion 4, the needle body portion 5, and the pipe portion is performed.

Lastly, step S11 for providing chemical treatment using silicone and the like is performed.

By doing so, the eyeless suture needle 1 as shown in FIG. 1 can be obtained.

As explained above, the eyeless suture needle 1 manufactured by the manufacturing method of the embodiment of the present invention is able to keep all of the hole diameter error of the blind hole 6, the surface roughness of the inner surface of the blind hole 6, the shape of the opening portion of the blind hole 6, and the depth of the blind hole 6 within a permissible range which does not decrease the drawing strength of the suture thread 41 (refer to FIG. 5).

As shown in FIG. 5, the suture thread 41 is inserted to the blind hole 6 of such eyeless suture needle 1, and caulked and fixed, thereby enabling to achieve good workability, increase the quality of the completed suture needle with the needle, and equalization. Also reduction of cost can be attained by decreasing discarded needle due to attachment defect.

It is also acceptable to obtain one eyeless suture needle 1 from a needle base material in which the linear material 11 is joined to only one side of the pipe 12.

EXPLANATION OF THE REFERENCE NUMERALS

1 . . . eyeless suture needle, 2 . . . thread attaching portion, 3 . . . needle tip, 4 . . . needle tip portion, 5 . . . needle body portion, 6 . . . blind hole, 6a . . . inner circumferential surface of the blind hole, 11 . . . linear material (linear member), 12 . . . pipe (pipe-like member), 13 . . . needle

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base material, 14 . . . long blind hole, 21 . . . stainless steel plate material (metal plate material), 23 . . . pipe element tube, 24 . . . cored bar, 25 . . . dies, 26 . . . dies, 31, 32, 33 . . . flat drill (drill), 41 . . . suture thread

The invention claimed is:

1. A manufacturing method of an eyeless suture needle comprising;

a step of obtaining a hollow cylindrical material by rolling a metal plate material, and welding abutting portions,

a step of manufacturing a hollow cylindrical member including a core drawing step of reducing a diameter and adjusting a thickness of the hollow cylindrical material using a cored bar and a tube drawing step of reducing the diameter and adjusting an outer form of the hollow cylindrical material without using the cored bar, and by adjusting a number of times of repetition of the core drawing step and the tube drawing step, manufacturing the hollow cylindrical member having an annular shape cross section and having uniform concavity and convexity formed on an inner circumferential surface thereof, and

a step of, while abutting linear members each having a circular shape cross section to end faces of the hollow cylindrical member, joining the linear members to the end faces of the hollow cylindrical member by butt resistance welding, and forming a joining portion in flush to obtain a needle base material which becomes a base material of two eyeless suture needles, and thereafter processing the linear members at each of both end portions of the needle base material to form needle tip portions, and thereafter cutting each of both end portions of the hollow cylindrical member of the needle base material with a length for thread attaching portions remaining on each of the linear portions.

2. The manufacturing method of the eyeless suture needle according to claim 1, wherein a surface roughness Rz of the inner circumferential surface of the hollow cylindrical member is 5 μ m to 15 μ m.

3. The manufacturing method of the eyeless suture needle according to claim 1, comprising a step of chamfer processing an opening portion of the hollow cylindrical member in a plurality of chamfer angles using a plurality of drills having different point angles.

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